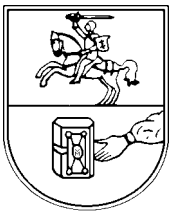
VILNIAUS UNIVERSITETAS

MATEMATIKOS IR INFORMATIKOS

FAKULTETAS



VILNIUS UNIVERSITY

FACULTY OF MATHEMATICS

AND INFORMATICS

Research
and
Publications
Report

2004

Naugarduko 24, 03225 Vilnius, Lithuania

Editor: V. Mackevičius

CONTENTS

FACULTY OF MATHEMATICS AND INFORMATICS

http://www.mif.vu.lt

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DEPARTMENT OF MATHEMATICAL ANALYSIS*

http://www.mif.vu.lt/katedros/mak/en

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Traditionally, the department gives courses in mathematical analysis (calculus) and related subjects. In recent years, the department became more oriented towards applications by offering several courses in actuarial and financial mathematics. The research areas of the department include probability limit theorems in infinite-dimensional spaces, heavy-tailed distributions, time series, econometric models, stochastic analysis, complex-variable function theory.

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S. Norvidas. Mathematical analysis; complex, harmonic, and functional analysis. norvidas@ieva.maf.vu.lt

V. Paulauskas. Probability limit theorems in functional spaces. Approximations of multidimensional stable laws. Autoregressive models. vpaul@ieva.maf.vu.lt, vygantas.paulauskas@maf.vu.lt

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D. Surgailis. Long memory. Fractional integration. Self-similar processes. Financial mathematics. sdonatas@ktl.mii.lt

R. Zovė. Doctoral student: random Cantor-type sets. rzove@centras.lt

Publications. Journals with ISI SC Index – 2; International reviewed issues – 0; Lithuanian licensed issues – 6; Other – 0; Submitted – 4.

DEPARTMENT OF DIFFERENTIAL EQUATIONS AND NUMERICAL ANALYSIS

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Professors of the department give courses on differential equations (ODE and PDE), numerical analysis, optimization methods, applied mathematics, calculus (at the Faculties of Economics, Chemistry, and Natural Sciences), and various more specialized lectures. The main research fields of the department are ordinary and partial differential and integrodifferential equations, their numerical analysis, and applied mathematics.

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V. Skakauskas. Population dynamics. vladas.skakauskas@maf.vu.lt
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Publications. Journals with ISI SC Index – 1; International reviewed issues – 1; Lithuanian licensed issues – 4; Other – 0; Submitted – 1.

DEPARTMENT OF PROBABILITY THEORY AND NUMBER THEORY

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Professors of the department give courses in algebra, number theory, probability theory, discrete mathematics, and various more specialized lectures in the directions mentioned. They also give lectures on calculus at the Faculties of Physics, Economics, and Communications. Their main scientific interests are related to the algebraic, analytic, and probabilistic number theories and combinatorics. A great attention is also paid to neighboring problems of probability theory, to the development of Lithuanian mathematical thought, and to popularization of the mathematical sciences.

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E. Gaigalas. Quadratic forms. edmundas.gaigalas@maf.vu.lt, http://www.mif.vu.lt/katedros/ttsk/bylos/ge/ge_a

R. Garunkštis. Analytic number theory. Zeta-functions. ramunas.garunkstis@maf.vu.lt, http://www.mif.vu.lt/~garunkstis

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H. Markšaitis. Algebraic number theory and the Galois theory. hamletas.marksaitis@maf.vu.lt, http://www.mif.vu.lt/katedros/ttsk/bylos/mar/mar_a

G. Misevičius. Probabilistic theory of expansions of numbers and functions. gintautas.misevicius@maf.vu.lt, http://www.mif.vu.lt/katedros/ttsk/bylos/mis/mis_a

J. Norkūnienė. Doctoral student: Iterated-logarithm laws in probabilistic combinatorics. jolita.norkuniene@mif.vu.lt

D. Šiaučiūnas. Doctoral student: value distributions of periodic zeta-functions.

J. Šiaulys. Limits laws in probabilistic number theory. distributions of additive functions with rational argument. The insurance mathematics. jonas.siaulys@mif.vu.lt, http://www.mif.vu.lt/katedros/ttsk/bylos/siau/siau_a

V. Zacharovas. Doctoral student: probabilistic combinatorics; convergence rates in limit theorems. vytas.zacharovas@mif.vu.lt

S. Zamarys. Doctoral student: moments of L-functions.

Publications. Journals with ISI SC Index – 10; International reviewed issues – 9; Lithuanian licensed issues – 25; Other – 4; Submitted – 18.

DEPARTMENT OF MATHEMATICAL STATISTICS

http://www.mif.vu.lt/katedros/msk

Head Prof. Vilijandas Bagdonavičius
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The main research areas at the department: theoretical and applied mathematical statistics, reliability and survival analysis, stochastic analysis, limit theorems in probability theory and mathematical statistics, operation research, Markov processes, nonlinear dynamics.

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B. Beresneva. Doctoral student.

A. Bikelis. Asymptotic analysis of quasi-lattice distributions. algimantas.bikelis@maf.vu.lt

V. Čiočys. Mathematical models of economics.

R. Eidukevičius. Mathematical modeling. Experimental planning and statistical analysis in oncology. rimantas.eidukevicius@sc.vu.lt

B. Grigelionis. Stochastic analysis and applications. Mixed exponential processes and models of stock returns. broniusg@ktl.mii.lt, jurgita@ktl.mii.lt

J. Jodko. Doctoral student.

V. Kazakevičius. Mathematical statistics. Nonlinear stochastic dynamic systems. vytautas.kazakevicius@maf.vu.lt

J. Kruopis. Mathematical statistics, quality control, and their applications.

Š. Leonas. Doctoral student.

R. Levulienė. Mathematical statistics, reliability, survival analysis. ruta.levuliene@maf.vu.lt

R. Maslovskis. Doctoral student.

K. Mikalauskas. Doctoral student.

A. Šukys. System analysis and modeling. Optimization, automatization, and control of complex systems.

J. Turkuvienė. Doctoral student.

P. Vaitkus. Large-deviation probabilities. Neural networks. Nonlinear time series.

A. Zaikina. Doctoral student.

Publications. Journals with ISI SC Index – 7; International reviewed issues – 7; Lithuanian licensed issues – 5; Other – 2; Submitted – 2.

DEPARTMENT OF COMPUTER SCIENCE

http://www.mif.vu.lt/katedros/cs/Welcome

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The department supervises the education in informatics for the students in bachelor, master, and doctor programs. Research areas: software process, semantics of programs, artificial intelligence, retrieval of logical proofs, real-time systems, converter construction, error-correcting codes.

A. Adamonis. Support and maintenance process modeling. andrius.adamonis@maf.vu.lt

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Publications. Journals with ISI SC Index – 4; International reviewed issues – 0; Lithuanian licensed issues – 5; Other – 2; Submitted – 1.

DEPARTMENT OF DIDACTICS OF MATHEMATICS

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The department supervises mathematics teachers training. The research areas of the department include the mathematical education at secondary school, college, and university levels.

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Š. Repšys. Dynamic models of physiological structure of population. sarunas.repsys1@mif.vu.lt

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Publications. Journals with ISI SC Index – 0; International reviewed issues – 3; Lithuanian licensed issues – 4; Other – 3; Submitted – 1.

DEPARTMENT OF COMPUTER SCIENCE II

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The research areas at the department include methods and applications of nonlinear and computational modeling, computational geometry, methods of computer vision, digital image, speech and signal processing, data structures and algorithms, Internet technology and information systems. The research is intended to be applied to problems of computer software, physics and mathematics, natural sciences, and to some topics of medicine, linguistics, and social sciences.

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Š. Repšys. Doctoral student: dynamic models of physiological structure of population. sarunas.repsys@mif.vu.lt

A. Risovas. Doctoral student: financial violation risk management in Lithuanian state tax administration environment. Data mining and visualization. a.risovas@vmi.lt

T. Sakalauskas. Doctoral student: real-time computer graphics methods. tomas.sakalauskas@prewise.lt

J. Skučas. Doctoral student: 3D-object identification and analysis in medical imaging. josk@erpservis.lt

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Publications. Journals with ISI SC Index – 12; International reviewed issues – 12; Lithuanian licensed issues – 10; Other – 1; Submitted – 2.

DEPARTMENT OF SOFTWARE ENGINEERING

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The department supervises the software engineering study program. The research areas of the department include software process, software engineering methods, software quality management, information systems modeling, geographic information systems, applied software systems, modeling of physical processes, document archiving, document configuration, semantics of loop programs operating with recurrences, electronic signature.

R. Baronas. Computer simulation of reaction-diffusion processes in nonhomogeneous media. Data retrieval in long-term computer-based document archives.
romas.baronas@maf.vu.lt, http://www.mif.vu.lt/~baronas

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Publications. Journals with ISI SC Index – 7; International reviewed issues – 4; Lithuanian licensed issues – 6; Other – 0; Submitted – 2.

DEPARTMENT OF ECONOMETRIC ANALYSIS

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Research areas of the department: financial mathematics; time series; functional data analysis; limit theorems in probability and their applications to statistics and econometrics; bootstrap and other resampling methods in statistics and econometrics.

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V. Čekanavičius. Signed compound Poisson approximations. Kolmogorov's problem. vydas.cekanavicius@maf.vu.lt

S. Dranickaitė. Doctoral student: estimating Value at Risk with multivariate time series models. sandra@vb.lt

A. Elijio. Doctoral student: statistical methods in educational sample surveys. aistuciuke@hotmail.com

M. Juodis. Doctoral student: limit theorems for dependent random variables. juodis@centras.lt

A. Klivečka. Doctoral student: random-coefficient ARCH models. a.klivecka@sigmatelas.lt

V. Krencius. Doctoral student: insurance models with investment. krencius@ldr.lt

R. Lapinskas. Regression methods in ecology and medicine. remigijus.lapinskas@maf.vu.lt

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M. Radavičius. Nonparametrical and adaptive estimation; econometrics; classification; image analysis. mrad@ktl.mii.lt

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V. Zemlys. Doctoral student: functional limit theorems for summation processes. vaidotas.zemlys@maf.vu.lt

D. Zuokas. Doctoral student: testing epidemic change in mean and variance. danaz78@one.lt

Publications. Journals with ISI SC Index – 5; International reviewed issues – 1; Lithuanian licensed issues – 9; Other – 1; Submitted – 2.

DEPARTMENT OF MATHEMATICAL COMPUTER SCIENCE

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Head Prof. Mindaugas Bloznelis
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The department was established in May of 2002 in order to consolidate teaching and research activities in the areas of information theory, cryptography, algorithms, and discrete mathematics. The research focuses on probabilistic analysis of number-theoretical structures, combinatorial statistics, and randomized algorithms.

G. Bareikis. Arithmetical functions in the polynomial semigroup. gintautas.bareikis@maf.vu.lt, http://www.mif.vu.lt/katedros/matinf/asm/bg/bg_a

M. Bloznelis. Probability limit theorems and combinatorial statistics. mblozn@ieva.maf.vu.lt, http://www.mif.vu.lt/katedros/matinf/asm/mb/mba

R. Grigutis. Structure of homogeneous Abelian groups of finite rank. rimantas.grigutis@maf.vu.lt, http://www.mif.vu.lt/katedros/matinf/asm/gr/gr_a

A. Mačiulis. Mean values and limit theorems for arithmetic functions. algirdas.maciulis@maf.vu.lt, http://www.mif.vu.lt/katedros/matinf/asm/ma/ma_a

V. Stakėnas. Probabilistic number theory, functions on Farey fractions. vilius.stakenas@maf.vu.lt, http://www.mif.vu.lt/katedros/matinf/asm/vs/vs0

G. Stepanauskas. Mean values and limit theorems for arithmetic functions. gediminas.stepanauskas@maf.vu.lt, http://www.mif.vu.lt/katedros/matinf/asm/ste/ste_a

Publications. Journals with ISI SC Index – 0; International reviewed issues – 2; Lithuanian licensed issues – 2; Other – 0; Submitted – 0.

HABILITATION PROCEDURES

1. **R. Garunkštis**, Zeta and related functions, 2004, Vilnius University.
2. **V. Skakauskas**, Dynamics models of population structure and their separable solutions, 2004, Vilnius University.

DOCTORAL THESES

1. **A. Kurtinaitis**, Solution of boundary problems for a system of nonlinear Schrödinger equations. Advisor prof. **F. Ivanauskas**.
2. **G. Praninskas**, Properties of exponents with Ochan-type topologies. Advisor prof. **F. Ivanauskas**.
3. **A. Skučaitė**, Large-deviation theorems for heavy-tailed random sums. Advisor prof. **V. Paulauskas**.
4. **D. Šiaučiūnas**, Investigations of periodic zeta-function. Advisor prof. **A. Laurinčikas**.
5. **V. Zacharovas**, Distribution of random variables on the symmetric group. Advisor prof. **E. Manstavičius**.

PUBLICATIONS

Abbreviations:

LMR	*Lietuvos Matematikos Rinkinys*
LMJ	*Lithuanian Mathematical Journal**
NAMC	*Nonlinear Analysis: Modelling and Control, ISSN 1392–5133* (Vilnius)
ProcLMS–2004	Special issue of *Lietuvos Matematikos Rinkinys*, 2004, **44**: *Proceedings of XLV Conference of Lithuanian Mathematical Society, June 17–18, 2004, Lithuanian University of Agriculture, Kaunas.*
ProcFPM	*Proceedings of Scientific Seminar of Faculty of Physics and Mathematics, Šiauliai University*

Articles: Journals with ISI Science Citation Index and ISI Proceedings

1. **G. Alkauskas**,** Dirichlet series associated with strongly q-multiplicative functions, *The Ramanujan J.*, 2004, **8**, p. 13–21.
2. **G. Alkauskas** and **A. Dubickas**, Prime and composite numbers as integer parts of powers, *Acta Math. Hungarica*, 2004, **105**(3), p. 249–256.
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8. **R. Baronas** and **F. Ivanauskas**, Modelling of moisture movement in wood during long term outdoor storage, *IV European Congr. Computat. Methods Appl. Sc. Engin., Abstracts, July 24–28, 2004, Jyvaskylä, Finland*, Jyvaskylä, 2004, p. 192.
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10. **A. Bastys**, **F. Ivanauskas**, and M. Sapagovas, Explicit solution of parabolic equation with nonlocal boundary conditions, *Diff. Eqs. Rel. Topics: Intern. Conf. dedicated to the 103rd anniversary of I. G. Petrovskii, May 16–22, 2004, Moscow*, Abstracts, Moscow, 2004, p. 24.
11. **M. Bloznelis**, Second order and resampling approximation of stratified U-statistics, *Nordic Congr. of Statisticians (NORDSTAT 2004), June 5–10, 2004, Jyvaskylä Univ., Finland.*
12. **M. Bloznelis**, Normal approximation for stratified samples, *Intern. Conf. Survey Sampling Th. Methodology, June 18–22, 2004, Tartu Univ., Estonia.*

13. **M. Bloznelis**, On combinatorial Hoeffding decomposition and asymptotic normality of subgraph count statistics, *Vienna Univ. of Technology, September 13–17, 2004, Austria*.
14. **L. Būtėnas**, Concept extraction from road traffic information, *VII Wireless Information Management Meeting, September 15–17, 2004, Uppsala Univ.*
15. **L. Būtėnas**, The architecture, design and, navigation schemes of the portals, *Proc. Conf. Information Technologies, Kaunas Univ. of Technology, January 28–29, 2004.*
16. **V. Čekanavičius**, Signed compound Poisson approximations, *Intern. Conf. Probab. Approximations in Complex Systems, January 12–14, 2004, Melbourne Univ., Australia*.
17. **A. Čivilis**, Tracking with guaranteed, spatially varying precisions, *VII Wireless Information Management Meeting, September 15–17, 2004, Uppsala Univ.*
18. **A. Čivilis**, Structure of vehicle tracking and information portals as an LBS, *Proc. Conf. Information Technologies, Kaunas Univ. of Technology, January 28–29, 2004.*
19. **J. Dabulytė**, **F. Ivanauskas**, and A. Žukauskas, The modeling of lighting-emitting diodes disposition for obtaining more constant temperature regime, *IX Intern. Conf. Math. Model. Analysis, May 27–29, 2004, Jurmala, Latvia, Abstracts*, p. 14.
20. **J. Dabulytė**, A. S. Dementjev, A. Jovaiša, and **F. Ivanauskas**, Numerical treatment of the thermal effects in end-pumped solid-state laseis with temperature dependent parameters, *XVI Lithuanian and Bielarussian seminar Lasers and optical nonlinearities, October 27–29, 2004, Vilnius*.
21. **J. Dabulytė**, **F. Ivanauskas**, and **V. Skakauskas**, The structure modeling of material composed of the orthotropic crystals, *XIII European Conf. Math. in Industry, June 21–25, 2004, Eindhoven, The Netherlands, Abstracts*, p. 252.
22. **S. Dapkūnas**, Software product quality assessment models, *Proc. Conf. Information Technologies, Kaunas Univ. of Technology, January 28–29, 2004.* Technologija, 2004, p. 308–313 (in Lithuanian).
23. A. Dementjev, **F. Ivanauskas**, and **A. Kurtinaitis**, Changes of polarization state and quality of beams during OPA process, *Optical Parametric Processes and Periodical Structures: Intern. Workshop, September 26–29, 2004, Vilnius*, p. 91–92.
24. **A. Dubickas**, Inverse problems for Mahler's measure, *Bunyakovsky Intern. Conf., August 16–21, 2004, Kyiv, Abstracts*, p. 154.
25. **A. Dubickas**, The Pell equation for polynomials, *VI Intern. Conf. "Algebra and Number Theory: Modern Problems and Applications," September, 13–17, 2004, Russia, Saratov, Abstracts*, p. 132.
26. **A. Dubickas**, The values of Mahler measures of algebraic numbers, *IV European Congr. Math.*, Stockholm, Sweden, June 27–July 2, 2004: List of Posters, 2.8, `http://www.math.kth.se/4ecm/poster.list.html02`.
27. **R. Eidukevičius**, I. Narkevičiūtė, E. Kavaliūnaitė, and G. Bernatonienė, Pertussis is the main cause of prolonged cough illness in children, *XIV European Congr. Clinical Microbiology and Infectious Diseases, May 1–4, 2004, Prague, Czech Republic*, **10**, Suppl. 3, p. 665–666.

28. **R. Eidukevičius**, I. Narkevičiūtė, A. Mikelionytė, G. Bernatonienė, and V. Baliukynaitė, Etiological diagnostics of bacterial meningitis in children, *Intern. J. Infectious Diseases, Internat. Soc. Infectious Diseases*, 2004, **8**, Suppl. 1: 11th ICID Abstracts, p. 101.

29. **R. Eidukevičius**, O. Rudzevičienė, and I. Narkevičiūtė, Skin tests and total immunoglobulin E in young children with atopic dermatitis, *IX Internat. Symp. Immunological, Chemical, and Clinical Problems of Food Allergy, April 18–21, 2004, Budapest, Hungary*.

30. **E. Garška** and R. Giriūnienė, Hydrocarbon gas sensor on SAW, *Intern. Conf. Sensors Electronics and Micr. Technology Progr., Odesa, Ukraina*, 2004, p. 72.

31. **E. Garška** and R. Giriūnienė, Possibility of creation of acoustoresistivity sensor, *Intern. Conf. Sensors Electronics and Micr. Technology Progr., Odesa, Ukraina*, 2004, p. 5.

32. **E. Garška** and R. Giriūnienė, Surface potencial modulation and catalytic process of SAW, *VIII Intern. Conf. Electronics, May 18–20, 2004, Kaunas*.

33. **B. Grigelionis**, Extreme value theory using power normalization, *XXIV Intern. Sem. Stability Problems for Stochastic Models, September 10–17, 2004, Jurmala, Latvia*.

34. **R. Ivanauskaitė** and **A. Laurinčikas**, On moments of zeta-functions of certain cusp forms, *VI Intern. Conf. "Algebra and Number Theory: Modern Problems and Applications," September 13–17, 2004, Russia, Saratov, Abstracts*, p. 137–138.

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38. **F. Ivanauskas**, **R. Vaicekauskas**, A. Žukauskas, et al., Stability of the quadrichromatic solid-state lamp, *X Internat. Symp. Science and Technology of Light Source, July 18–22, 2004, Tulouse, France*.

39. **F. Ivanauskas**, Lithuanian Grid projects, *Conf. Baltic Grid, October 5–7, 2004, Vilnius*, http://www.mif.vu.lt/grid/.

40. **F. Ivanauskas**, **R. Baronas**, and J. Kulys, Modelling of biosensors based on a array of enzyme microreactors, *XVII Nordic Sem. Computat. Mechanics, October 15–16, 2004, Stockholm, Sweden*.

41. **A. Juozapavičius**, Principles of visualization of data structures and data analysis, *VII Wireless Information Management Meeting, Uppsala University, September 15–17, 2004*.

42. **K. Karčiauskas** and J. Peters, Modeling and foundations of multi-sided patches, *Worksh. Geom. Model. and RAG, MSRI, April 3–4, 2004, Berkeley*.

43. **K. Karčiauskas**, High-quality spline surfaces guided by multi-sided patches, *Worksh. Industry Challenges in Geometric Modeling in CAD–2004, March 17–18, 2004, Darmstadt, Germany*.

44. **R. Kašuba**, One remark concerning shortness as the sister of talent and two words torwards friendship in mathematics between Belorus and Lithuania, *Conf. Math. Education: Present and Perspective, February 17–19, 2004, Mogilev*.

45. **R. Kašuba**, Wie kann man die mathematische Beschaeftigungen wirklich anziehend gestalten?, *XXXVIII Ann. Meeting of German Didactical Soc., Augsburg, March 1–5, 2004, Germany*.

46. **R. Krasauskas**, Toric surfaces in Geometric Modeling, *Worksh. Geom. Modeling and RAG, Mathematical Science Research Institute, April 3–4, 2004, Berkeley*.

47. **R. Krasauskas**, Bezier curves and patches on toric surfaces, Algorithmic, *Combinat. Applicable Real Algebraic Geometry, Mathematical Science Research Institute, CA, April 12–16, 2004, Berkeley*.

48. **R. Krasauskas**, Bezier parameterizations of toric surfaces, *Worksh. Algebraic Geom. Geometric Modeling, September 26–29, 2004, Nice, France*, invited talk.

49. **R. Krasauskas**, Web3d Visualization of Laguerre Geometry (Demo), *First Intern. Worksh. Web3D Technologies in Learning, Education and Training, September 30–October 1, 2004, Udine, Italy*.

50. **R. Kudžma**, Difficulties learning the notion of absolute value, *Conf. Math. Math. Education-2004, Kaunas Univ. of Technology, April 1–2, 2004, Kaunas*.

51. **R. Kudžma**, Inverse function and semiotics, *V Intern. Conf. Teaching Mathematics: Retrospective and Perspectives, May 7–8, 2004, Liepaja, Latvia*.

52. **E. Kutka**, Multilevel and multipurpose models of road traffic, *VII Wireless Information Management Meeting, Uppsala Univ., September 15–17, 2004, Uppsala*.

53. **E. Kutka**, Modeling of statistical transport data and forming web portal from it, *Proc. Conf. Information Technologies, January 28–29, 2004, Kaunas Univ. of Technology*.

54. **E. Kutka**, The model of a transport network and transport database implementation in an information system, *Intern. Conf. Transport Means, October 28–29, 2004, Kaunas*.

55. **K. Lapin**, The analysis of document context in standardization of the organisational documents, *Proc. Conf. Information Technologies, January 28–29, 2004, Kaunas Univ. of Technology*, Technologija, 2004, p. 564–569 (in Lithuanian).

56. **A. Laurinčikas**, On moments of zeta-functions associated to certain cusp forms, *VI Intern. Conf. Algebra and Number Theory: Modern Problems and Applications", September 13–17, 2004, Russia, Saratov, Abstracts*, p. 136–137.

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59. **R. Leipus**, **V. Paulauskas**, and **D. Surgailis**, Renewal type regime switching, long memory, and stable limits, *Intern. Conf. Stat. Models for Financial Data, May 25–27, 2004, Graz, Austria.*
60. **R. Macaitienė**, Probabilistic results for general Dirichlet series, *VI Intern. Conf. Algebra and Number Theory: Modern Problems and Applications", September 13–17, 2004, Russia, Saratov, Abstracts*, p. 140–141.
61. **R. Macaitienė**, Discrete value distribution of general Dirichlet series, *Bunyakovsky Intern. Conf., August 16–21, 2004, Kyiv, Abstracts*, 2004, p. 168–169.
62. **E. Manstavičius**, Analytische Zahlentheorie in der symmetrischen Gruppe, *Intern. Conf. Elementary and Analytic Number Theory, May 24–28, 2004, Mainz, Abstracts*, p. 14.
63. **E. Manstavičius**, Iterated logarithm laws and the cycle lengths of a random permutation, *III Colloq. Math. Comp. Sc. "Algorithms, Trees, Combinatorics, and Probabilities," Viena Univ. Technology, September 13–17, 2004, Austria.*
64. **R. Maslovskis**, **F. Ivanauskas**, **R. Baronas**, and **P. Vaitkus**, Neural networks for estimation of the pollution, *VII Intern. Conf. Comp. Data Analysis Modeling: robustness and computer intensive methods, September 6–10, 2004, Minsk.*
65. **A. Račkauskas**, Invariance principles in Hölder spaces and new tests of epidemic change, *Intern. Conf. Statistical Models for Financial Data, May 25–27, 2004, Graz University of Technology, Austria.*
66. **M. Radavičius** and G. Jakimauskas, Robust projection pursuit, *VII Conf. Comp. Data Analysis and Modeling, September 6–10, 2004, Minsk.*
67. **S. Ragaišis**, Conception of software process capability and maturity, *Proc. Conf. Information Technologies, Kaunas Univ. of Technology, January 28–29, 2004*, Technologija, 2004, p. 303–307 (in Lithuanian).
68. **V. Skakauskas** and **Š. Repšys**, Modelling of a sexual population dynamics, *IX Intern. Conf. Math. Model. Analysis, May 27–29, 2004, Jurmala, Latvia, Abstracts*, p. 59.
69. **V. Skakauskas**, A population dynamics model with complex structure, *Intern. Conf. Dynamic Systems Applications, July 5–10, 2004, Antalya, Turkey, Abstracts*, p. 85.
70. **V. Skakauskas**, **Š. Repšys**, Modelling of the population dynamics with maternal care, *Joint Conf. Computat. Math. Population Dynamics, June 21–25, 2004, Trento, Italy, Abstracts*, p. 131.
71. **V. Skakauskas**, A bisexual population dynamics model with strong maternal care, *Joint Conf. Computat. Math. Population Dynamics, June 21–25, 2004, Trento, Italy, Abstracts*, p. 43.
72. **E. Stankus**, Teaching probability theory at secondary school in Lithuania, *Conf. Mathematical Education: Present and Perspective, February 17–19, 2004, Mogilev.*
73. **D. Šiaučiūnas**, On the fourth moment of the periodic zeta-function on the critical line, VI *Intern. Conf. Algebra and Number Theory: Modern Problems and Applications, September 13–17, 2004, Russia, Saratov, Abstracts*, p. 141–142.
74. **V. Zacharovas**, The distribution of the order of random permutation on the subsets of the symmetric group, *Bunyakovsky Intern. Conf., Kyiv, August 16–21, 2004, Abstracts*, p. 190.

75. **D. Zuokas**, Testing volatility of financial markets, *Intern. Conf. Information Technology for Business, May 28, 2004, Vilnius University KHF, Kaunas.*

Books, textbooks, lecture notes (in Lithuanian)

1. **A. Dubickas** (Ed.), Problems Proposed for Mathematical Competition *Baltic Way 2004*, *Vilnius Univ., Faculty of Mathematics and Informatics*, 2004, 44 p.
2. **A. Dubickas**, XVI, XVII, and XVIII Lithuanian Team Olympiads in Mathematics, *Vilnius Univ., Faculty of Mathematics and Informatics*, 2004, 35 p.
3. **G. Bareikis**, Algebra and Analytical Geometry (lecture notes, exercises, and exam tasks for students of economics, http://www.mif.vu.lt/matinf/asm/bg/au.html.
4. **P. Golokvosčius**, Stability of Solutions of Differential Equations, Vilnius, 2004, 231 p.
5. **R. Lapinskas**, Time Series with R, http://www.mif.vu.lt/~rlapinskas.
6. **V. Mackevičius**, Limit and Continuity of a Function; Differentation (lecture notes), http://www.mif.vu.lt/~vigirdas.
7. **S. Norgėla**, Mathematical Logic, *TEV*, Vilnius, 2004, 192 p.
8. A. Skūpas, **V. Stakėnas**, **E. Stankus**, and V. Vitkus, Mathematics 12: Teacher's Texbook, *TEV*, Vilnius, 2004, 151 p.
9. **V. Stakėnas**, Cryptostories, *TEV*, Vilnius, 110 p., to appear.
10. **A. Šukys**, Elements of Mathematical System Theory, Part I, http://mif.vu.lt/ sukys.

Other publications (in Lithuanian)

1. **A. Apynis**, **E. Stankus**, and J. Šinkūnas (Eds.), *For a Young Mathematician.* V, *Problems and Solutions of Lithuanian School of Young Mathematicians 2002–2004*, Danielius, Vilnius, 2004, 148 p.
2. **A. Apynis**, Linear Equations Systems, In: [1], p. 45–59; 122–127.
3. J. Dudaitė and **A. Elijio**, The purpose: to improve the education, *Švietimo naujienos*, 2004, **12**, p. 4–5.
4. J. Dudaitė and **A. Elijio**, Mathematics lesson in the grade 8 of Lithuanian school, Statistical overview, *Švietimo naujienos*, 2004, **4**, p. 2–3.
5. J. Dudaitė and **A. Elijio**, Concern about Mathematics, *Švietimo naujienos*, 2004, **5**, p. 4–5.
6. J. Dudaitė, **A. Elijio**, Č. Urbienė, and A. Zabulionis, International mathematics and science study TIMSS 2003, Report, *National Egzamination Centre*, Vilnius, 2004, 36 p.
7. **A. Elijio**, V. Sičiūnienė, and M. Stričkienė, Analysis of the State Exam Task: Mathematics, *National Examination Centre*, Vilnius, 2004, 28 p.

8. **H. Jasiūnas**, Vygantas Paulauskas, *Vilnius Univ., Faculty of Mathematics and Informatics*, 28 p.
9. **R. Kašuba**, Adding, subtracting, and multiplying in column and long division, In: [1], p. 84–88; 145–147.
10. **R. Kašuba**, Twelve businessmen flying like black crows, *Kompiuterija*, **2**(78), 2004, p. 46–47.
11. **R. Kašuba**, Mathematical vitamins, *Kompiuterija*, **4**(80), 2004, p. 46–47.
12. **R. Kašuba**, One step from computation, *Kompiuterija*, **6**(82), 2004, p. 48–49.
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14. **R. Kašuba**, Problem of Sisyphus but not his occupation, *Kompiuterija*, **12**(88), 2004, p. 45–46.
15. **J. Kubilius**, Section of Mathematics, In: *Lietuvos Mokslų akademijos veikla 2003* (Activities of Lithuanian Academy of Sciences in 2003), Vilnius, 2004, p. 37–39.
16. **J. Kubilius**, Professor K. Baršauskas and his time, *Mokslo Lietuva*, 2004, **12**(302), p. 16–17.
17. **J. Kubilius**, Twenty five years before, *Mokslas ir gyvenimas*, 2004, **6**, p. 30–31; 36–37.
18. **J. Kubilius**, University celebrates 425th anniversary. University yesterday, today, and tomorrow, *Respublika*, 2004, **211**, p. 32–33; *Spektras*, 2004, **1**, p. 4–5.
19. **J. Kubilius** and B. Riauba, 75 to Vytautas Statulevičius, *Mokslas ir technika*, 2004, **11**, p. 43.
20. **J. Kubilius**, Preface, In: *Sambūris Patirtis*, 2004, p. 5–6.
21. **R. Lapinskas** and **R. Verikaitė**, Population projection: a parametric approach, http://forum.europa.eu.int/Public/irc/dsis/Home/main?index.
22. **R. Lapinskas** and **R. Verikaitė**, One parametric fertility model, http://forum.europa.eu.int/Public/irc/dsis/Home/main?index.
23. **E. Manstavičius**, Member of the Lithuanian Academy of Sciences Vygantas Paulauskas is 60, *Lietuvos mokslų akademijos žinios (News of Lith. Acad. of Sciences*), 2004, **3**(32), p. 15.
24. **V. Stakėnas**, Ciphers and numbers, In: [1], p. 37–43, p. 115–121.
25. **G. Stepanauskas**, Number Divisors, In: [1], p. 25–36, p. 110–114.
26. **V. Verikaitė**, Digest of Lithuanian mathematicians and informaticians, Part I: Dissertations, http://www.mif.vu.lt/matinf/savadas/savadas.html.

Other lectures and reports

1. **V. Čekanavičius**, Compound approximations in actuarial science, *Köln, Germany, June 24.*
2. **R. Garunkštis**, Growth of the Lerch zeta-functions, *J.W. Goethe Universität, Frankfurt um Main, Germany, May 8.*
3. **R. Garunkštis**, Lindelöf hypothesis for the Lerch zeta-functions, *J.W. Goethe Universität, Frankfurt um Main, Germany, May 15.*

4. **R. Garunkštis**, On the zeros of the Hurwitz zeta-function, *J.W. Goethe Universität, Frankfurt um Main, Germany, May 22.*
5. **A. Laurinčikas**, A survey on limits theorems for general Dirichlet series, *J.W. Goethe Universität, Frankfurt um Main, Germany, May 11.*
6. **A. Laurinčikas**, The joint universality of Dirichlet series, *J.W. Goethe Universität, Frankfurt um Main, Germany, May 12.*
7. **A. Laurinčikas**, Mean values of coefficients of zeta-functions of certain cusp forms, *J.W. Goethe Universität, Frankfurt um Main, Germany, May 18.*
8. **R. Leipus**, The test for stationarity versus trends and unit roots for a wide class of dependent errors, *Université de Lille 3, France, March 16.*
9. **E. Stankus**, Probability theory at high school, *Vilnius Conf. Mathematics Teachers, June 22–23, 2004, Vilnius.*
10. **E. Stankus**, Combinatorics and statistics: methods of training, *Alytus Sem. Math. Teachers, August 25, 2004.*
11. **E. Stankus**, Methods of solving problems of combinatorics, probability theory and statisticss, *Alytus Sem. Math. Teachers, November 20, 2004.*
12. **E. Stankus**, Let us use probabilities in decision making, *Pasvalys and Panevėžys Sem. Math. Teachers, November 26, 2004.*
13. **E. Stankus**, Problems of probability theory at high school, *Vilnius Teacher Prof. Development Center, January 26, 2004.*
14. **E. Stankus**, Mathematics textbooks for 12th form, *Kaišiadorys Teachers Sem., January 30, 2004.*
15. **E. Stankus**, Training according to a new textbook for 12th form, *Kaunas Teachers Sem., February 25, 2004.*
16. **E. Stankus**, Mathematics at school and university, *Vilnius Teachers Sem., June 15, 2004.*
17. **V. Paulauskas**, Approximation of operator semigroups, *Technical University of Zurich (ETH), Austria, April 14.*
18. **V. Paulauskas**, On the unit roots for multi-indexed autoregression models, *Technical University of Vienna, Austria, April 19.*

SCIENTIFIC CONTACTS

Participation in international projects

1. **A. Bikelis**, **B. Grigelionis**, **V. Bagdonavičius**, **V. Kazakevičius**, **R. Levulienė**. International programm *Analysis of Tire Reliability and Run Prediction*. 2002–2009.
2. **V. Čyras**. Expert in PHARE PPF projects e-city and e-Procurement.
3. **F. Ivanauskas**. Project COST No. 529: *Efficient Lighting for the 21st Century*, 2001 03 02–2006 06 07.
4. **F. Ivanauskas**. Project *Instruments and Standart Test Procedures for Laser Beam and Optics Charectirization*, Eureka-number EU2359 *Choclab II*. 2000–2005.
5. **A. Juozapavičius**. Project *Provision of Software Review Services*. Oslo University (Norway), OSIS (Denmark), Vilnius University (Lithuania). 2004.
6. **A. Juozapavičius**. EU Project *M buttons: Multilingual Mathematics Context Help*, Cambridge (Great Britain), Helsinki (Finland), Kosice Technical (Slovakia), Podlasie (Poland) Universities, J. Bolyai Mathematical (Hungary) and Denmark Mathematics Teachers (Denmark) Associations. 2001–2004.
7. **A. Juozapavičius**. Wireless Information Management (an international network including Aalborg, Jyvaskula, Uppsala, Trondheim, Vilnius, and Vilnius Technological Universities) financed by NORFA (Nordic Academy of Advanced Studies). 2004–2005.
8. **V. Tumasonis**. Participation in Unicode Consortium for developing the Unicode Standard.

Visits by staff

1. **V. Bagdonavičius**. Invited professor at Université Victor Segalen (Bordeaux II), France. Research work in reliability theory and survival analysis. Lectures on probability theory and mathematical statistics. January 1–Juny 30.
2. **M. Bloznelis**. Bielefeld University, Germany. October-November.
3. **L. Būtėnas**. Aalborg University, Denmark. May 10–13, June 3–4.
4. **V. Čekanavičius**. Melbourne University, Department of Mathematical Statistics, Australia. January 03–31.
5. **V. Čekanavičius**. University of Cologne, Faculty of Mathematics and Natural Sciences. June 21–27.
6. **A. Čivilis**. Aalborg University, Denmark. Research visits. April 19–May 19; June 3–4; November 24–December 17.
7. **A. Juozapavičius**. Herriot-Watt University, United Kingdom. Workshop in Computer vision, presentation *Indices for Computer Vision*. January 14–17.
8. **A. Juozapavičius**. Lund University, Sweden. Workshop *Baltic Sea Virtual Campus*. February 19–21.
9. **A. Juozapavičius**. Cambridge University, United Kongdom. Workshop *Multilingual Mathematics Help Context: Thesaurus*. March 3–7.

10. **A. Juozapavičius**. Praha, Czech Republic. Conference EE CIO 2004, presentation *Visual Data Analysis*. June 11–14.
11. **A. Juozapavičius**. Oslo University, Norway. Workshop *Oil Spill Detection*. August 11–13.
12. **A. Juozapavičius**. Oslo University, Norway. Workshop *Remote Sensing Methods*. August 29–31.
13. **A. Juozapavičius**. Volos University, Greece. Socrates/Erasmus program, multiple presentations. September 4–11.
14. **A. Juozapavičius**. Hague, Holland. Conference *IST-2004*. November 14–17.
15. **R. Garunkštis**. J. W. Goethe University, Frankfurt um Main, Germany. Research visit May 2–30.
16. **F. Ivanauskas**. Portugal, Funchal, University of Madeira, Management Committee and working group meeting of COST-529. November 17–21.
17. **J. Ignatavičiūtė**. Uppsala University, Sweden. Conference *Wireless Information Management*. September 15–18.
18. **R. Krasauskas**. Mathematical Science Research Institute, Berkeley, USA. March 22–April 19.
19. **E. Kutka**. Aalborg University, Denmark. May 10–13; June 3–4.
20. **A. Laurinčikas**. J. W. Goethe University, Frankfurt on Main, Germany. Research visit May 2–May 30.
21. **R. Leipus**. Lille 3 university, France, March 4–28.
22. **A. Mitašiūnas**. Taking part in the conference EuroSPI'2004: European Software Process Improvement, Trondheim, Norway, November 10–12.
23. **V. Paulauskas**. Technische Universitaet Wien, Austria. May 27–29.
24. **V. Paulauskas**. Swiss Federal Institute of Technology, Zuerich, Switzerland. April 9–22.
25. **G. Stepanauskas**. Brussels, Belgium. IST Committee meetings. March 30–April 2; June 15–18; September 20–23; November 29–December 2.
26. **G. Stepanauskas**. Heraklion, Greece. Conference of the Europian Association of Deans of Science. April 21–26.
27. **G. Stepanauskas**. The Hague. Conference of Information Society Technologies. November 14–18.
28. **D. Surgailis**. Universite Mayne, LeMans, France. September 9–October 3.

Foreign visitors

1. Prof. A. N. Chuprunov, Kazan State University, Russia. August 27– September 9.
2. Prof. Sergei Golovan, Central Economics and Mathematics Institute Russian Academy of Sciences, Moscow, Russia. Lectures at Workshop *Econometric Models of Discrete Choice*. June 27– July 4.
3. Prof. R. Goldman, Rice University, Houston, TX, USA. Lecture *Advances in Geometric Modeling*. July.

4. Prof. Pavel Katyshev, Central Economics and Mathematics Institute of Russian Academy of Sciences, Moscow, Russia. Lectures at Workshop *Econometric Models of Discrete Choice*. June 27– July 4.
5. Prof. Anatolii Peresetskii, Central Economics and Mathematics Institute Russian Academy of Sciences, Moscow, Russia. Lectures at Workshop *Econometric Models of Discrete Choice*. June 27– July 4.
6. Prof. Bero Roos, Hamburg University, Dresden University, Germany. March 4–12.
7. Dr. Kate Stange, Brown University, USA. Lecture *Rational points on curves* at Seminar of Mumber Theory , January 12.
8. Dr. Jörn Steuding, Johan Wolfgang Goethe Universiät, Frankfurt am Main, Germany. Lectures at Seminar of Number Theory: *Random matrix theory and what it predicts for the Riemann zeta-function*, March 19. *Applications of Nevanlinna's value distribution theory*, September 3.
9. Dr. Juergen Wolfart, Johan Wolfgang Goethe Universität, Frankfurt am Main, Germany. Research visit. September 23– October 2 Lectures at the seminar of number theory: *ABC for polynomials, Belyi functions and dessins d'enfants*, September 24. *Uniformization, regular dessins, and quasiplatonic surfaces*, September 27. *Galois actions on dessins for twisted Fermat curves*, October 1.

GRANTS, AWARDS

1. **A. Adamonis**, **A. Mitašiūnas**, **V. Tumasonis**, **D. Čiukšys**, **S. Dapkūnas**, **I. Naujikas**, **S. Ragaišis**, **R. Tamoševičius**. Lithuanian State Science and Studies Foundation grant B-06/2003 to support the research project *Development of Mature Software Process Implementation Methodology and Tools*.
2. **G. Alkauskas**, **A. Dubickas**, **P. Drungilas**, **R. Garunkštis**, **A. Kačėnas**, **A. Laurinčikas**. Lithuanian State Science and Studies Foundation grant to support the project *Some Problems of Algebraic and Analytic Number Theory*.
3. **M. Bloznelis**. Lithuanian State Science and Studies Foundation grant T-60/04 to support the research project *Samples drawn without replacement*.
4. **M. Bloznelis** and the staff of the Department of Mathematical computer science. Vilnius University Science Fund grant for the research results.
5. **M. Bloznelis**. NATO collaborative linkage grant PST.CLG.980325 *Analysis of Probability Distributions of Combinatorial Statistics*.
6. **F. Ivanauskas**. Lithuanian State Science and Studies Foundation grant 3036 to support the project *Development of Information Technologies for Identification of Structural Defects*. 2002–2004.
7. **F. Ivanauskas**. Lithuanian State Science and Studies Foundation grant C-07/2003 to support the research project *Computer Simulation of the behavior of heterogeneous processes and systems (MODELITA)* (VU MIF, VU ChF, VU MTMI, KTU, VGTU, BchI, MII, FI). Reg. No.C-03048. 2003–2006.

8. **A. Juozapavičius**. Lithuanian State Science and Studies Foundation grant B-03027/B-01/2003 *Transport and Public Information Mobile Solutions* (KTU, VU, VGTU). The scientifc advisor is R. Plestys (KTU). 2003–2006.
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APPENDIX

Publications appeared in 1999–2003

Abbreviations:

LMR	*Lietuvos Matematikos Rinkinys*
LMJ	*Lithuanian Mathematical Journal*
NAMC	*Nonlinear Analysis: Modelling and Control, ISSN 1392–5133* (Vilnius)
ProcLMS–99	*Proceedings of XL Conference of Lithuanian Mathematical Society* (a special supplement of *Lietuvos Matematikos Rinkinys*), Institute of Mathematics and Informatics, Vilnius, 1999.
ProcLMS–2000	Special issue of *Lietuvos Matematikos Rinkinys*, 2000, **40**: *Proceedings of XLI Conference of Lithuanian Mathematical Society, Šiauliai, June 22–23, 2000.*
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VILNIAUS UNIVERSITETAS
MATEMATIKOS IR INFORMATIKOS FAKULTETAS

VILNIUS UNIVERSITY
FACULTY OF MATHEMATICS AND INFORMATICS

Research and Publications Report 2004
Mokslinis darbas ir publikacijos 2004 m.

Redaktorius V. Mackevičius

Anglų kalba

2005 02 21. 3,9 leidyb. apsk. l. Rinko ir maketavo D. Jonutienė. VU Matematikos ir informatikos fakultetas, Naugarduko 24, 03225 Vilnius. Nemokamai.